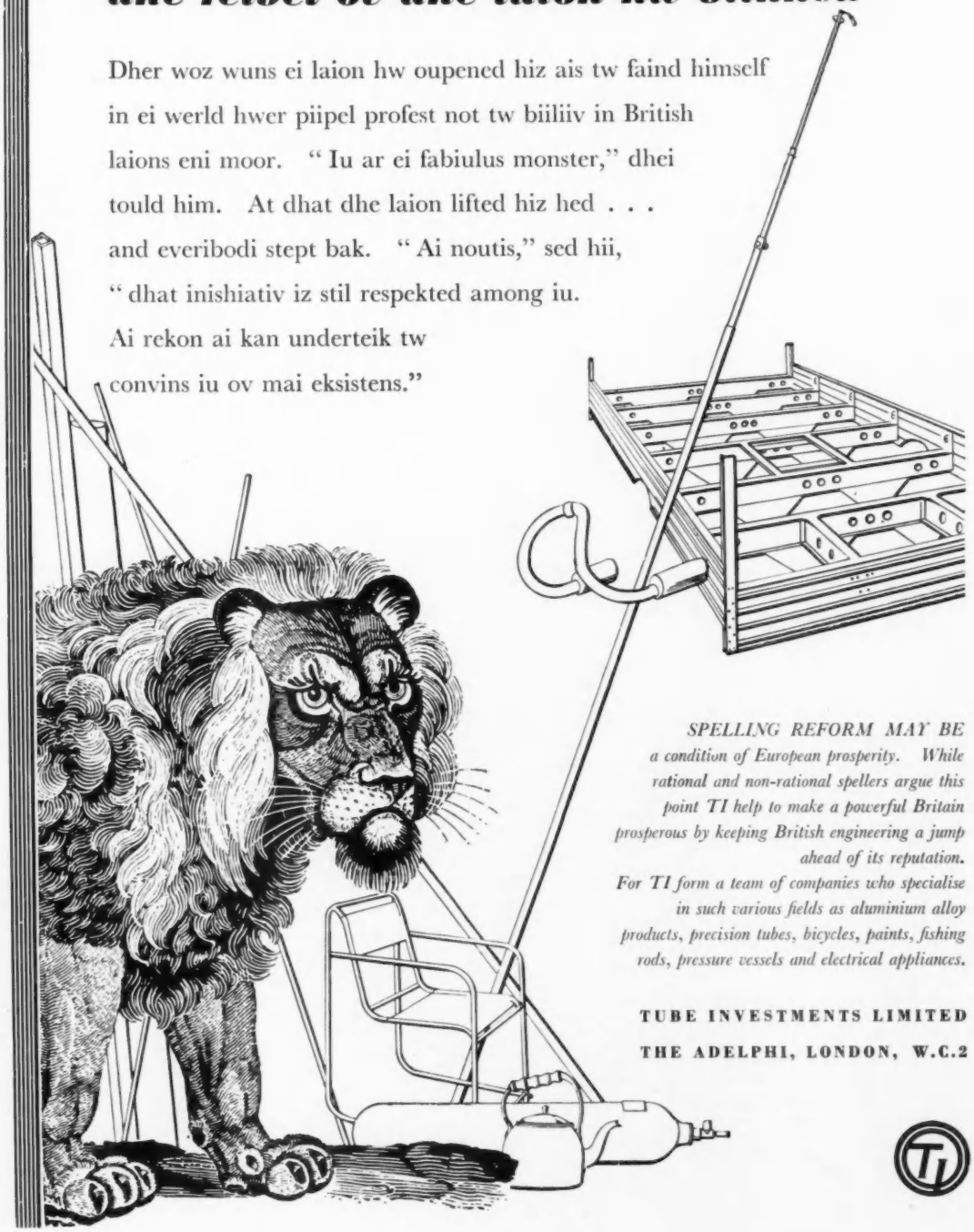
DESIGN

A MONTHLY JOURNAL FOR MANUFACTURERS AND DESIGNERS

No 5 · MAY 1949 · ISSUED BY THE COUNCIL OF INDUSTRIAL DESIGN

dhe feibel ov dhe laion hw blinked

Dher woz wuns ei laion hw oupened hiz ais tw faind himself in ei werld hwer piipel profest not tw biiliiv in British laions eni moor. "Iu ar ei fabiulus monster," dhei tould him. At dhat dhe laion lifted hiz hed . . . and everibodi stept bak. "Ai noutis," sed hii, "dhat inishiativ iz stil respekted among iu. Ai rekon ai kan underteik tw convins iu ov mai eksistens."



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DESIGN

NUMBER FIVE · MAY 1949

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BIF 1949

THE OUTSTANDING SUCCESSES of the 1949 BIF in London, from the point of view of imaginative exhibition technique, were those free-standing, non-conformist displays that did not observe the standard height, facia, colour and lettering to which their smaller neighbours were subject. This individuality of expression—always, be it noted, by trained designers—gave the Grand Hall at Olympia a verve and swagger which were enjoyed at Earl's Court only as one approached the British Rayon Federation's display, flanked by the two giants of the rayon industry which broke away from limitations of style and colour.

Ten years ago this would have been a dangerous observation to make. That it can be safely recorded today is proof of the strides we have made in this country in exhibition technique and design. In 1939, critics of the BIF were rightly pleading for some degree of uniformity to combat the confusion of competing heights, colours and lettering. In those days the call for unity was urgent and necessary, for few exhibitors looked further than a contractor for their designs or a signwriter for their lettering, and the cult of the *modernistical* was still in the ascendant. Today we are rich in designer-architects who can challenge the world in exhibition technique—and there are progressive firms willing to employ them.

This is not, however, an argument for removing the overseeing eye of a single architect from those sections of the BIF frequented by small and specialist firms, such as the jewellers and silversmiths. The National Hall at Olympia was an admirable example of the benefits of cooperative discipline in display.

The 1949 BIF in London will surely be remembered as the Textile Fair. Some 300 firms mounted the biggest display of textiles ever housed under one roof. Walking round, with 1951 in mind, one was reassured that the Festival of Britain selectors will not have great difficulty in finding materials that meet all the canons of contemporary excellence. Much of the credit for the lively design tradition in textiles must undoubtedly go to the pioneer work of the Cotton Board Colour, Design and Style Centre. That the same influences are at work in the rayon industry was shown in the display by the Rayon Federation.

By contrast with textiles, the 1951 furniture selectors may not, on the BIF showing, have such an easy time. This industry seemed strangely beset by its past, both distant and immediate—the distant represented by a few clever facsimiles and many near-reproductions of Queen Anne, Sheraton or Chippendale, the immediate by the modernistic, whether upholstered or tubular. It was remarkable that, with two honourable exceptions, the best contemporary furniture at the BIF was found on the prestige stands of the great chemical companies.

The policy of putting all the eggs into one basket may bring immediate business, but there are powerful influences at work today in the USA to wean American taste away from the period reproduction and the antique. Would it not be commercial common sense in an industry so important as furniture to lay off its bet, so to speak, by devoting part of its revenue to design-research into contemporary needs and materials? This is, in fact, being done by a growing number of firms, but there was little evidence of it at the BIF.

The same design problems face the pottery and glass industries, both of which currently enjoy a profitable prestige overseas for their reproductions of famous old patterns. With few exceptions, the Fair showed little sign that new ideas are abroad in these industries. It is, of course, understandable that a successful potter or glass-maker should regard design advice from outside the trade as intolerable impertinence, but the need for new ideas can no longer be in doubt when the head of New York's most powerful group of retail stores criticises British manufacturers, as he did last month, for shipping to the States patterns that are centuries old. It is only proper to point out that the BIF pottery display was totally unrepresentative of British potters. The industry as a whole was not showing at the Fair, and to signpost the few exhibits as *The Pottery Section* was dangerously misleading. P. R.

DECORATION

in contemporary industrial design

Britain has a long tradition of excellence in decorative design. What is she doing today that will maintain—or add to—her reputation in this field where popular art and industrial design meet? . . . asks *NOEL CARRINGTON*

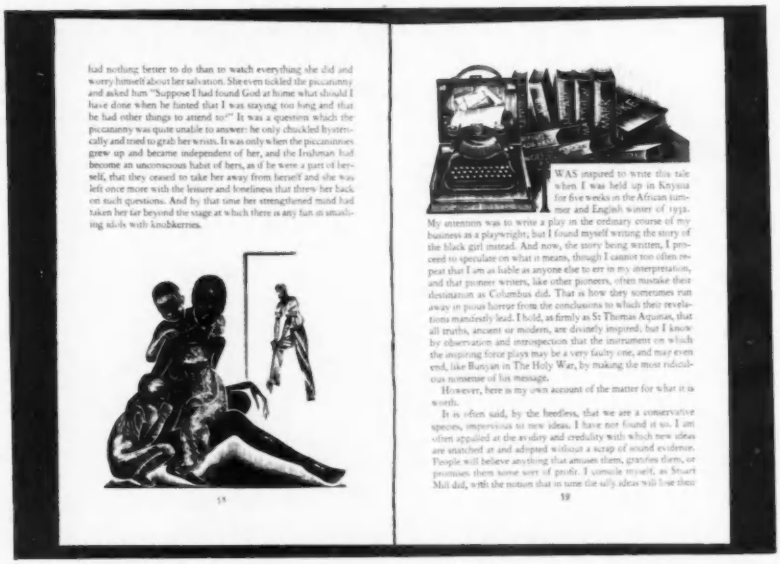
THERE ARE TWO things to be said about decoration of industrial products at present; the first concerned solely with our present circumstances in Britain, the second concerned with more or less permanent factors in contemporary civilisation. As regards the first matter we have to face the grim fact that the designers' function is dormant or defunct in many professions, because of the over-riding need of exports. Whilst Utility designs for furniture were responsible for improving some standards, they gave no scope to trade designers. In pottery, textiles, glass, there has been no designing to speak of in England, and the younger designers do not know what it is to see their designs put into production. They may sometimes design for export—that is to say, precisely for the people they understand least. This is a stultifying state of affairs, and to my mind it makes any talk about industrial design foolish as far as these important key trades are concerned. It will take a considerable time to recover from this enforced period of idleness.

A plate made by the Staffordshire firm of Adams, potters since 1657. Of early nineteenth century character—a rich example of popular art in manufacture—it is still in production as one of a set of eight *Valentine* patterns

The second matter is very different. It derives from the disputations of critics. Most of the leaders of the movement termed "modern" between the wars have been concerned more with form than with decoration, and some have been very lukewarm towards it. There has been little realisation that pattern and colour could be the natural complements to plain surfaces. Decorative patterns, if used at all, have been for the most part geometric or reticent. The architects, who as a profession have carried more than usual weight in industrial design for various reasons, have been anxious to eliminate any suspicion of classical formulas from their buildings, and equally from their furnishings. The cult of the plain surface has gone much further than the demands originally made by functionalists and labour-savers. The justification of this puritanism was that nearly all decorative patterns in mass were debased—"meaningless" as was said without meaning—and that therefore a purge was healthy. In reality I believe the antagonism towards decoration was deeper and almost psychological.

The desire felt by healthy human beings for decorative patterns is universal and I cannot see any reason why it should not be gratified. Nearly all women find some scope in designing their dress and general make-up. Many men and women can exercise their skill in

John Farleigh's wood-engraved illustrations for Bernard Shaw's *Black Girl in Search of God* helped to make this little allegory into a world-wide best seller and did much to revive the popularity of the cheap illustrated book. An unusual feature of this book was the co-operation of author, artist and printer, Shaw himself roughing out the illustrations in the first place


had nothing better to do than to watch everything she did and worry himself about her salvation. She even tickled the piccaninny and asked him "Suppose I had found God at home what should I have done when he hinted that I was staying too long and that he had other things to attend to?" It was a question which the piccaninny was quite unable to answer: he only chuckled hysterically and tried to grab her wrists. It was only when the piccaninnies grew up and became independent of her, and the Irishman had become an unconscious habit of hers, as if he were a part of herself, that they ceased to take her away from herself and she was left once more with the leisure and loneliness that threw her back on such questions. And by that time her strengthened mind had taken her far beyond the stage at which there is any fun in smashing idols with knobkerries.

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WAS inspired to write this tale when I was held up in Knysna for five weeks in the African summer and English winter of 1932. My intention was to write a play in the ordinary course of my business as a playwright, but I found myself writing the story of the black girl instead. And now, the story being written, I proceed to speculate on what it means, though I cannot too often repeat that I am as liable as anyone else to err in my interpretation, and that pioneer writers, like other pioneers, often mistake their destination as Columbus did. That is how they sometimes run away in pious horror from the conclusions to which their revelations manifestly lead. I hold, as firmly as St Thomas Aquinas, that all truths, ancient or modern, are divinely inspired; but I know by observation and introspection that the instrument on which the inspiring force plays may be a very faulty one, and may even end, like Bunyan in The Holy War, by making the most ridiculous nonsense of his message.

However, here is my own account of the matter for what it is worth.

It is often said, by the heedless, that we are a conservative species, impervious to new ideas. I have not found it so. I am often appalled at the avidity and credulity with which new ideas are snatched at and adopted without a scrap of sound evidence. People will believe anything that amuses them, gratifies them, or promises them some sort of profit. I console myself, as Stuart Mill did, with the notion that in time the silly ideas will lose their

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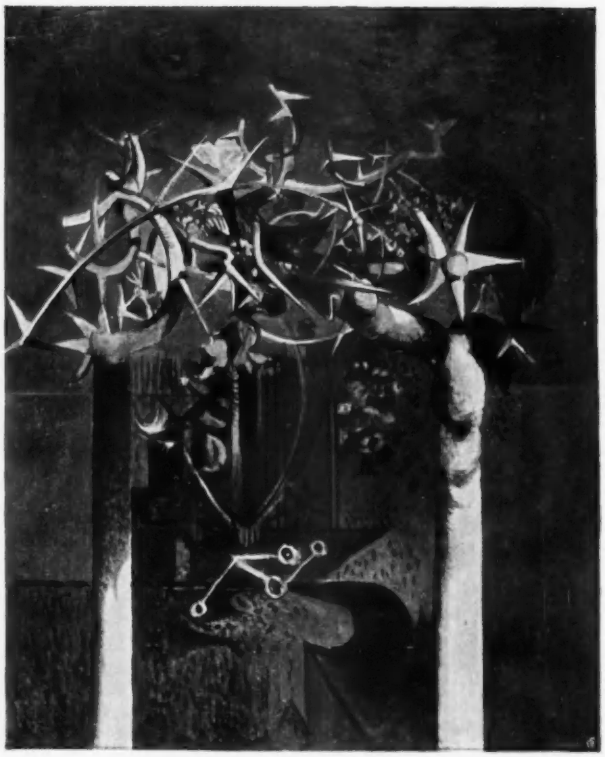
John Farleigh has also turned his hand to designing in many fields (as well as to organising a Crafts Centre for other craftsmen). These designs were made for Morton Sundour Ltd, and the fabrics made by their subsidiary, Edinburgh Weavers. *Left to right*: Passion Flower (woven), Avalon, Spring Flowers (both printed)



Graham Sutherland is one of the best known of contemporary British painters and his works are to be found in the Tate and many other galleries. On the *left* is a reproduction of his painting *The Thorn Tree*. *Above*, a scarf designed for Ascher, with ink-blob shapes in black on a pastel background

gardening or making a home. I think the practice of an art, such as music, painting, sculpture or poetry, is far more satisfying than the enjoyment of these same arts as audience or spectator. Nevertheless the enjoyment to be obtained by the use of beautiful curtains, wallpapers, tableware, furniture, and so on is very considerable, and the more variety there is (within reason) the better it is for those who have to submit to uniformity elsewhere.

Those who are so suspicious of decoration seem to be confused by the fact that mass production has affected different trades in quite different ways. Admittedly machines can only with difficulty imitate the carving that is valued on old furniture; but on the other hand the transfer of patterns on to pottery is not seriously affected by the faster production of the china. At present no very satisfactory way of decorating plastic products has been found and, except for simple moulding, perhaps no suitable way will be found; but that is no argument for not printing patterns on wallpapers or not weaving patterns in tablecloths. Any woven material on which patterns can be printed is a suitable medium for decoration and the efficiency of printing is increasing all the time.

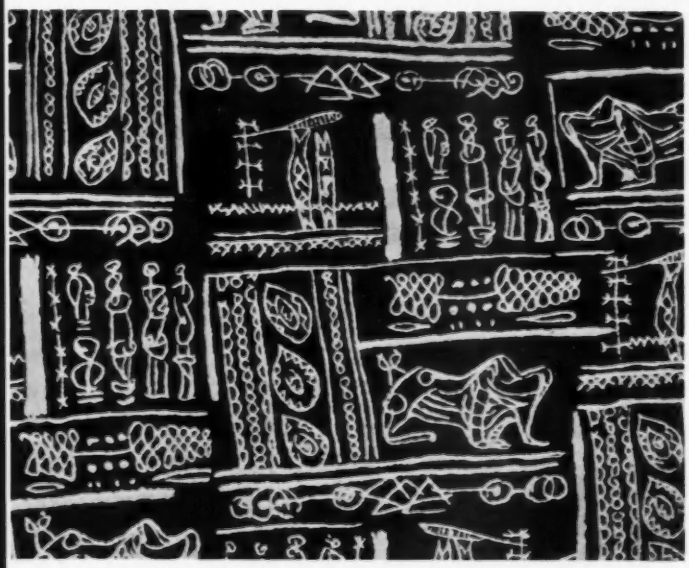
The masses in this country have usually resisted, in their obstinate and irrational way, the eccentricities and extravagances of the classes whose tastes were more easily swayed by fashions. In the period when the printing of good literature was classical and devoid of ornament, popular ballads and broadsheets were highly coloured and exuberant. The same tendency will be found in Staffordshire figures, the music-hall or the circus. The masses still want decorative pattern and colour in their surroundings, and, if designers will not give them new contemporary design, they will demand that the old be brought into use again. It is possible to design furniture which is decorative as well as suitable for mass production—it is easier, in fact, than copying exactly the admired and well-known period patterns; but (and this is the crux of the matter) the process of designing and improving must be going on the whole time. This applies equally to those many trades in which surface pattern is printed. A living tradition, like a living person, is changing all the time.

Those who despair of contemporary design are really shutting their eyes to facts which should be convincing enough. For the evidence I will simply ask my readers to consider the present state of book-

The work of Barnett Freedman shows that an artist can serve industry in many ways. As an official war artist, Freedman's paintings of *Mulberry* and other battle scenes are well enough known. More than any other man he has been responsible for the revival of lithography in book illustration and in advertising. He designed the George V Jubilee postage stamps. Recently he has redesigned the whole range of packages for the famous cotton firms of Clark's and Coats. The upper picture here shows them *before* and the lower picture *after* Freedman's redesign. He enjoys the advantage of having a good working knowledge of printing techniques and of being himself a brilliant calligrapher. *Below* are reproduced three of his famous wrappers for Faber and Faber books

illustration: it has never been more vigorous than it is in England today. They must be aware, too, that sculpture and painting are by no means dormant, and that before the last war some of the best textile designs seen for 50 years or so were being produced by several firms and artists here. What Eric Ravilious did for Wedgwood could have been done by a score of others. As for the trend of public taste, one has only to watch what has been happening at art exhibitions—the Van Gogh show, for example—and to follow the work of the Arts Council in all parts of the country.

Manufacturers can be sure that there is a great pent-up appetite for decorative products of almost any kind. Perhaps at first it will glut itself with the wrong kind of food, with rather disgusting results. If this happens, it will not be for lack of artists and designers. There is an excess of them looking for opportunity, but unfortunately barred by circumstance from the exercise of their talent—and thus from the acquisition of the necessary skill. It is desirable that the process of trial and error should be going on *now*, even if shortage of material provides an excuse for retaining austerity controls. I say nothing about foreign prestige and exports because such considerations are beside the point. A tradition in the arts comes about in its own way, because of a certain attitude to life, because of certain values, and not from any economic motive.

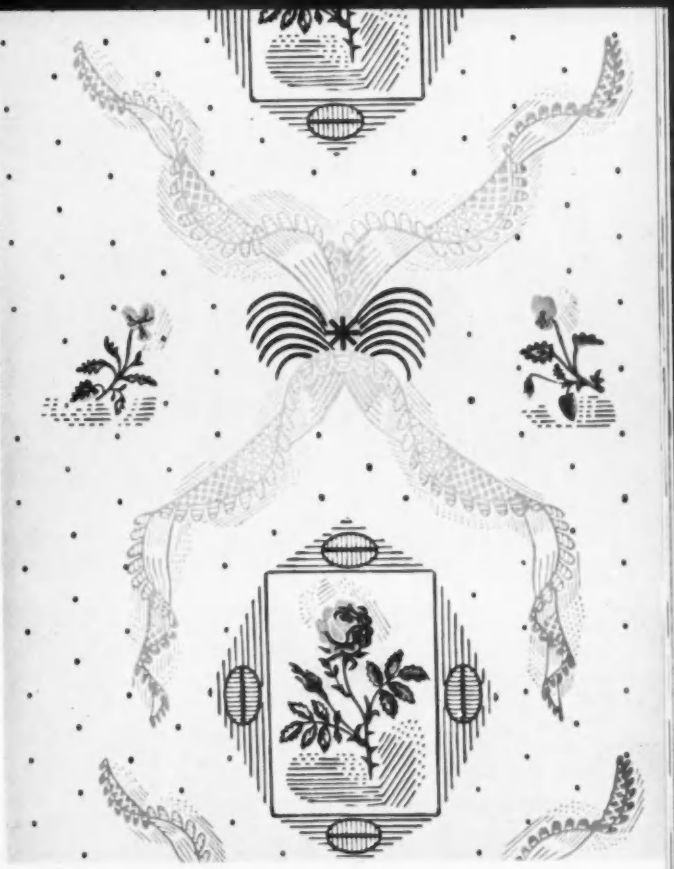


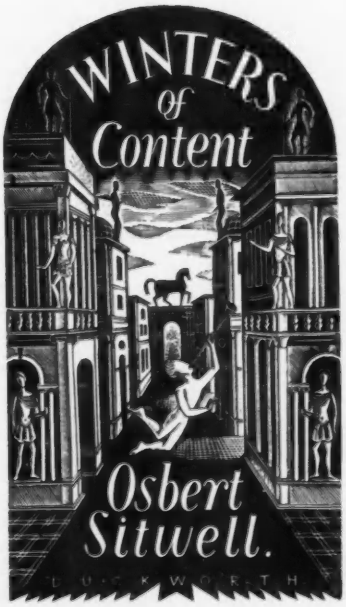
Edward Bawden is one of the most versatile ⟶ of English designers working today. His very individual and original humour is always recognisable in advertising—e.g., the Fortnum and Mason booklet cover shown *on right*. His wallpapers should be much better known. The example illustrated is produced by Cole and Son (Wallpapers) Ltd

The late Eric Ravilious was best known as an engraver and water-colour painter. The designs he made for Wedgwood showed a proper appreciation of pottery and its decoration ⟶

⟵ The sculpture of Henry Moore is now accepted for its emotional sincerity and has even earned the inevitable honour of caricature. Moore is a brilliant draughtsman and the textile design illustrated (*above, left*) shows an extension of his style to the printed pattern. It is a dress fabric for Ascher Ltd

"say kid
AMERICAN
GROCERIES!"
FORTNUM & MASON ★ PICCADILLY

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CANADIAN COMMENTARY

By George Englesmith

SEVERAL WELL-INTENTIONED MOVEMENTS toward rousing organised interest in Canadian industrial design were doomed to failure through lack of an underlying philosophy, a method of generating general interest, or any hope of winning the continuing confidence of the industries, designers and institutions concerned. Such were my observations in 1946, when I was presented with the opportunity of undertaking the present movement that has taken root, spread widely, and is constantly growing in stature.

As this report will introduce the Canadian movement to most readers of DESIGN, let me outline briefly the main points of its development. In June 1946, I had arrived from London to take up an appointment with the School of Architecture at the University of Toronto. Having been schooled in the relationship between architectural and industrial design by the late Professor Sir Charles Reilly, and having followed the development of modern design in Europe (particularly that of the *Bauhaus*) since 1932, I was more than ready to propagate this philosophy of design in Canada. And one was welcome.

This led to the introduction of an industrial-design problem within the Third Year of the University of Toronto course in architecture. The success of this adventure was largely due to the fact that we had a manufacturer as a "client," visited his factory, and enjoyed the cooperation of his design director and production engineer. Canadian schools of architecture exchange travelling exhibitions of their work

Experimental: *stacking tea-table* (at top of page) *was produced by low-pressure moulding of laminations of birch plywood and plastic resins. Designer, Douglas Simpson*

Shopping trailer *and tricycle are easily attached or detached —by the turn of a thumb-screw. Ball joint allows movement in any direction. Designer, A. M. Snider; for Sunshine Waterloo Co Ltd*

Slick "styling" *suggests American influence in the design of this electric cooker—in fact evolved by the engineering staff of Enterprise Foundry Co Ltd, Sackville, New Brunswick (in 1939)*

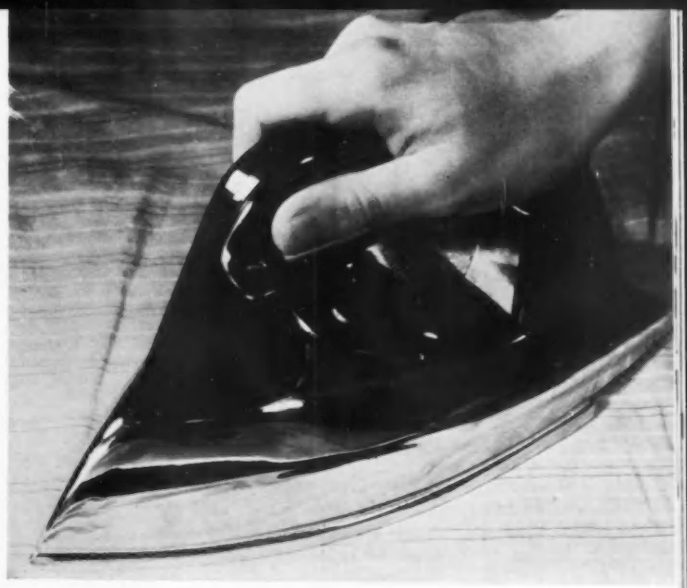
The author of this article came to England from Texas in 1932. In 1946 he returned to North America, to take up his present appointment with the University of Toronto School of Architecture. Mr Englesmith has been closely concerned in the development of many of the Canadian design organisations to which he refers here. He is a Bachelor of Architecture (Liverpool), Member of the Royal Architectural Institute of Canada, ARIBA, and MSIA

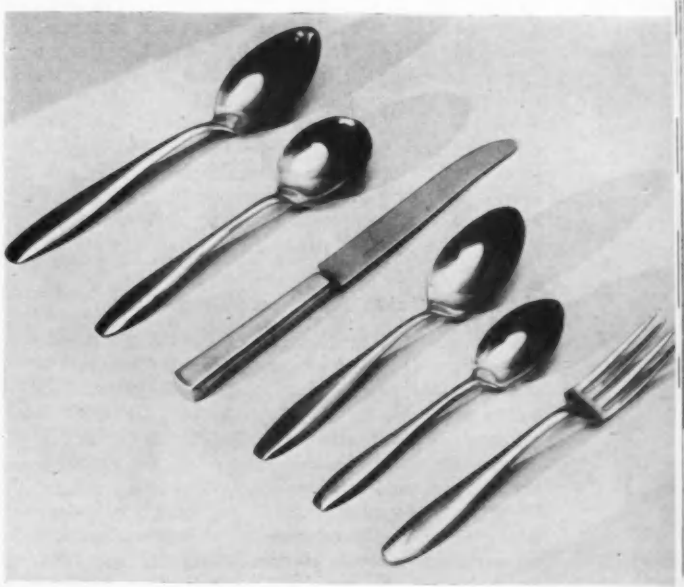
annually; those at McGill, Manitoba and British Columbia responded quickly to the design programme we presented and have since added the subject to their own curricula.

I soon struck up a liaison with the Society of Industrial Designers in the United States, the Society of Industrial Artists and the Council of Industrial Design in Great Britain. These three bodies supplied most of the photographs and other material needed for the campaign that followed (and continues).

After focusing attention on industrial design as a corollary to the professions of architecture and engineering, the next step was to discover and organise the men who were responsible for what design had taken place in Canadian products. This was done, and today the Association of Canadian Industrial Designers (ACID) exists as a professional body with a Dominion-wide charter and headquarters at 55 Metcalfe Street, Ottawa. Its first, and present, officers include Honorary President, Vincent Massey, CH; Hon. Vice-Presidents, Professor H. H. Madill (Director, University of Toronto School of Architecture) and Professor E. A. Allcut (Head, Department of Mechanical Engineering, U. of T.); President, G. Englesmith; Vice-President, J. B. Parkin; Secretary-Treasurer, Watson Balharrie. At present there are thirty members, from Vancouver to Nova Scotia.

Without the support of Mr H. O. McCurry, Director of the National Gallery in Ottawa, and one of the editors of the Gallery's quarterly, *Canadian Art*, Mr





One more iron. *There can be few manufacturing countries that do not produce at least one electric iron of modern design. Canadian example on this page has aluminium base and plastic handle. Designed by Frank Sugden for J. K. Macleod Co Ltd*

Inexpensive, *for sale through chain stores and hardware stores, is the range of stainless-steel flatware in pleasing simple shapes, by Universal Tool and Die Mfg Ltd, Montreal*

French-Canadian *design: the cup and bowl are by La Ceramique de Beauce. Teapot is by Medalta Potteries Ltd. All intended for mass production*

D. W. Buchanan, my concept of a Canadian "Council of Industrial Design" might never have been realised. It has, in fact, taken the form of two separate ventures. The first was the creation of a Design Index within the National Gallery—a selective file of products designed and manufactured in Canada.* Mr Buchanan has become its director, and I have remained as one of his three advisors.

The second part of this concept has become the National Industrial Design Committee (NIDC). This body is limited to thirty members who represent the relevant government departments, the universities, the ACID, the Canadian Manufacturers' Association (CMA), and other manufacturers and educational institutions.

This Committee has provided five scholarships to enable graduates in architecture and mechanical engineering from Canadian universities to take the course in product design at the American *Bauhaus*, the Institute of Design, Chicago. It provided $15,000 for a Design Centre at the 1948 Canadian National Exhibition, which was a great success. This exhibit publicised the ACID, the NIDC and the Design Index; a Design Quiz, in which over 10,000 people took part, also appeared as a booklet. Half of the exhibit featured design training, with full-size products and models by designers and university students, some of which enjoyed a very good Press. The Committee has drawn up a recommended curriculum for an autonomous department of industrial design within a university school of architecture.

British restraint, American "know-how"

From where we stand there is much admiration for the restraint of British design, and equal appreciation of the know-how of American industrial production techniques. However, subscribing to the creative approach of the *Bauhaus*, we assimilate all things but emulate none. The aim is simply *fine design meeting the needs of the Canadian life, culture and economy*. Plagiarism has been a cardinal Canadian sin and must be cured. Design solutions arise from marketing research and the logical potential of available materials and manufacturing processes.

Between the ACID, the Design Index and NIDC one has been able to achieve a fine degree of integration and cooperation among the various aspects of this movement—which, one trusts, will be maintained in the face of growth and new interests. Our activities have been reported in that excellent American paper *Interiors*, and we are pleased indeed to have it appear now in DESIGN, for we look forward to a greater exchange of news and views between the design world of these three countries.

Canada, as the world's third largest producer of manufactured goods, has much leeway to make up in design. Its population of little over 13,000,000 will have much to learn; they are a varied but coherent people, enterprising, frank and rational in their thinking. On their eminent common sense, and the background of a large and impressive natural heritage, we base many of our hopes and aspirations. Once convinced, Canadians are a very stable people. Whatever form and character will appear in our design, we wish it to be Canadian.

Canada's industries on show

Imagine a combination of Blackpool's pleasure beach and Birmingham's BIF, and one has a picture of the annual Canadian National Exhibition located on the shores of Lake Ontario, at the west end of Toronto, in permanent buildings. Consider that last year it was visited by over 5,000,000 people, and an idea occurs of the part industry can play in the life of this country. If we can inform the character of these displays and the design of the various products, we will have achieved an enviable position. This year we expect to see the beginnings of a general improvement.

Beginning last year we saw a Canadian International Trade Fair open in the CNE grounds, and are delighted that it was successful enough to continue this year as well. Here we may view the display and products of every country in the world and cultivate a cosmopolitan outlook. Our own manufacturers will find themselves alongside the more mature design traditions of older countries and be encouraged to profit by their example. Progress in Canada has truly begun. . . .

The Chipmunk training aircraft *illustrates the international background of much Canadian design. It comes from the Canadian associate company of the De Havilland Aircraft Co Ltd, of England; the head of the design team responsible for it is W. J. Jakimuk, formerly of Poland (where he designed fighter aircraft before the war). The Chipmunk is now being built in Canada and Britain to replace the DH Tiger Moth as the RAF's standard basic trainer*

* See "Canadian Design Index" by Donald W. Buchanan, in *Art & Industry*, August 1948. Most of the illustrations accompanying the present article come from the Index.

ILLUMINATION METER REDESIGNED

F. WINSTANLEY (Director, General Electric Co Ltd) outlines the development of a new product which is lighter, more compact and more foolproof than the old

Distinctive in shape *is the new GEC meter* (above). *Lettering formerly engraved on a metal plate inside the lid is now moulded into the base of the plastic case*

FOR SOME TIME, the GEC has supplied illumination meters suitable for everyday use, for the purpose of measuring light-intensities.

The meter consists essentially of a sensitive moving-coil instrument actuated by current from a photo-electric cell, the amount of current flowing in the circuit being directly proportional to the intensity of the light which falls on the cell. The user of the meter is therefore able to test the light-intensities of all sorts of installations, and to determine whether the amount of light agrees with the recommendations of the Illuminating Engineering Society's code.

The old design of the instrument had many good points, but it was of rather an awkward shape for carrying in the pocket. Its dimensions were $2\frac{1}{4}$ inches deep by approximately 3 inches diameter, and it weighed approximately 14 oz.

Experience in the use of the old instrument showed that inaccurate readings were occasionally obtained as a result of the user placing his head well over the instrument, in order to read the indications on the scale (which was on a horizontal dial). By taking the readings in this manner it was possible to cast a shadow on the photo-electric cell, and so reduce the correct reading of the illumination.

The Company therefore decided to redesign the light meter, and a new design, *illustrated here*, has been evolved by one of GEC's own engineers, Mr L. W. Barsdorf, AMIEE. In developing this design he was instructed that an instrument with the following features was required :

(*a*) It must be compact and easy to carry in the pocket.

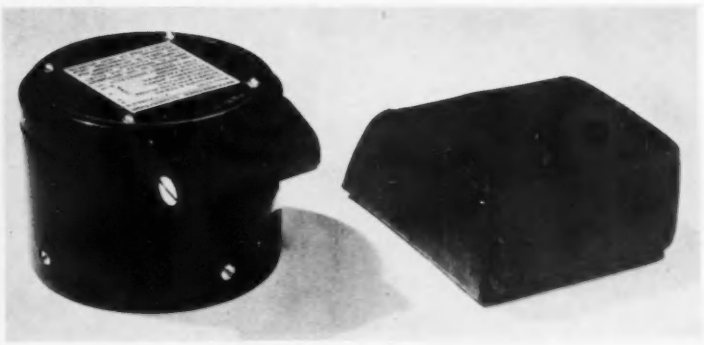
(*b*) It must be easily readable when standing or sitting away from the instrument, thus avoiding any inaccuracy caused by shadow of the head or body.

The major alteration in the resulting new model is that the scale is placed at an angle of approximately 125° to the plane of the photo-electric cell. The fact that the scale is set at such an angle necessitates a curved scale with slightly sloping sides, the lines of which had to be carefully gauged to ensure a well balanced appearance.

The new meter measures only $1\frac{1}{4} \times 2 \times 2\frac{3}{4}$ inches, and weighs approximately 5 oz. without its case. With this case, it still weighs less than $5\frac{1}{2}$ oz. and is thus easily carried in the pocket without any inconvenience.

The new light meter is not only an improvement on the old type in its performance, but is, we consider, an example of a well-proportioned article which has been developed in its entirety by an engineer. Moreover, it is no more costly to produce.

Old and new meters, side by side, show reduction in size effected



100 YEARS OF WRINGER DESIGN

Redesign of a familiar make, taking advantage of modern production methods, saves weight and space

IN 1850, what is generally believed to be the first wringer was made at Accrington by a blacksmith, Robert Tasker. It is now preserved in the factory of Entwisle & Kenyon Ltd, in the same Lancashire town.

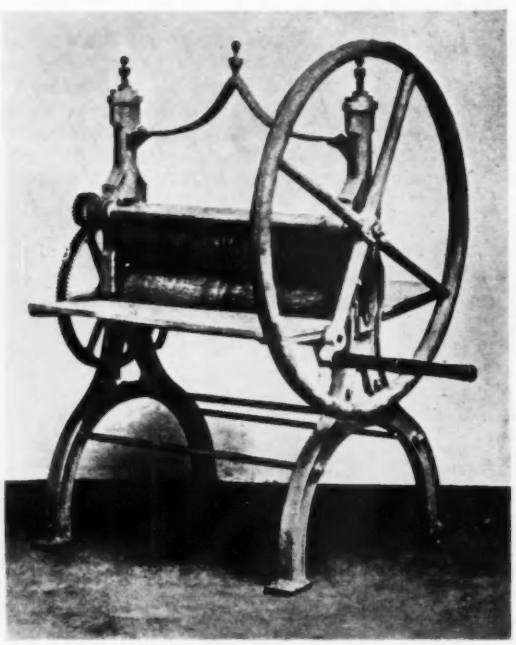
This firm—better known by their brand name of *Ewbank*—themselves began to make wringers about 1874. Their first model was one of the earliest quantity-produced portable wringers; it was made mainly of wood, which was used for the clamping rollers and even for the spring for loading the rollers. At first 15 to 20 of these wringers were made weekly: the market was hard to develop because big mangles, with 6-inch diameter wooden rollers, were still popular. (Incidentally, Ewbank still produce them in considerable quantities for export to Norway.)

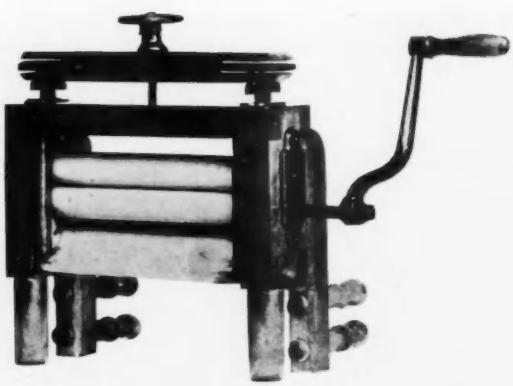
Gradually, however, the demand for small wringers increased and improved models were introduced, using rubber instead of wood for the rollers. During the 1930's, Ewbank concentrated on an enamelled wringer with cast-iron body for which they had their own foundry facilities.

Light alloys introduced

Recently, a new post-war Ewbank wringer has appeared, after extensive research, designed for Entwisle & Kenyon Ltd by F. B. Elcom Ltd of London. It marks a complete change from the firm's previous production technique, as its chief parts are gravity and pressure die-castings in aluminium and light alloys: die-casting plant has been newly installed in the Ewbank foundry.

The clean lines of the new wringer are evident from illustrations opposite. It is intended to sell at a competitive price in home and overseas markets (between £5 and £6 at home). As a preliminary to designing it, Elcom's carried out considerable research into both marketing and packaging. They have evolved a

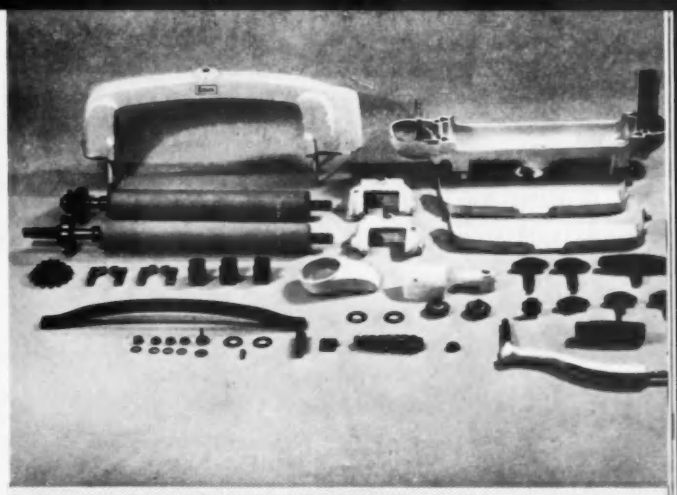




EVOLUTION OF A WRINGER

1850 *Robert Tasker made the first known wringer* (left)
1874 *Ewbank made wooden wringers* (above) *in quantity*
1938 *The same firm's pre-war model on its bulky stand* ▶
1949 *New model. 6 screws release stand to pack flat* ▶▶

Smooth surfaces and a colour-scheme of cream enamel and cadmium green enhance the appearance of the new wringer. Shown here is the prototype; *below, right*, on its stand, the production model



Component parts of the Ewbank. Its body is cast in two halves. Components are easily assembled into the lower half casting; the top half is then placed in position and clamped on

package which shows a reduction in volume of nearly 20 per cent, compared with the pre-war pack—a useful saving, especially where export orders are concerned.

Space-saving stand

Associated with the redesign of the wringer was the redesign of a stand on which it can be used. The earlier stand measured approximately 30 x 15 x 30 in., and could not be reduced to less than this bulky size for packing. The new stand has detachable crossbars the removal of which reduces its dimensions to 30 x 15 x 7 in. In other words, the thickness is less than a quarter of what it was, and it is now practicable, for the first time, to pack the stand in a fibreboard container—the type of package already in use for the wringer itself. Reassembly is simple: the bars are inserted into their sockets and clamped by tightening six screws.

ORDERLY COMPLEXITY

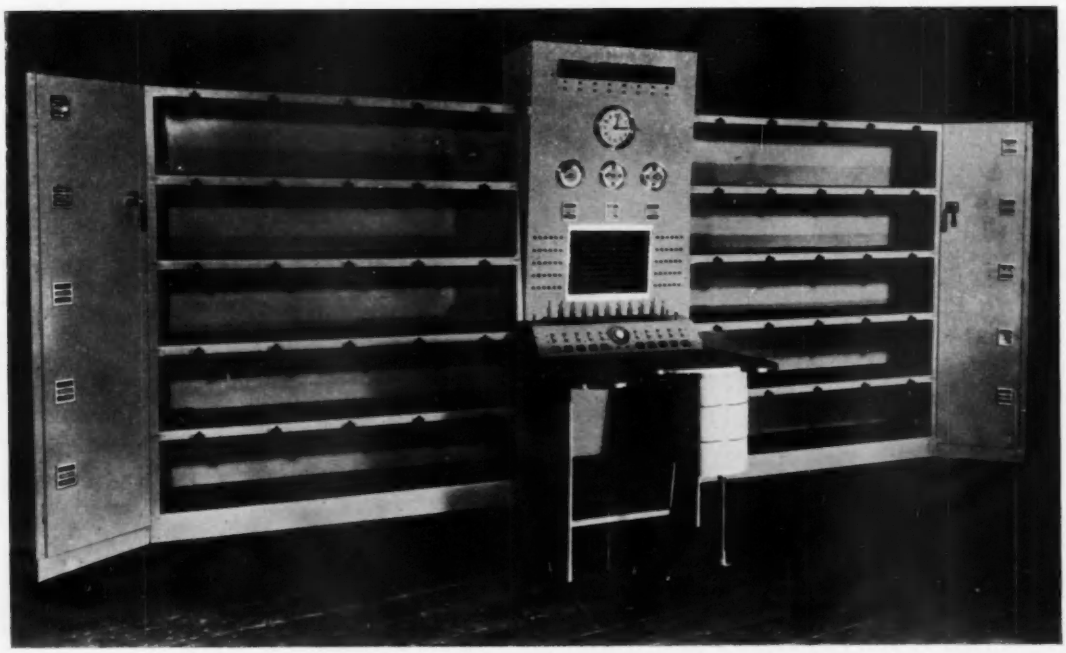
Research engineers and industrial designers co-operate to simplify presentation of technical information

EQUIPMENT FOR TESTING new types of dry battery has been produced for the Army Signals Research and Development Establishment by J. Langham Thompson Co. It was designed jointly by them and consultant designers, Scott-Ashford Associates, to an Army Signals specification.

Specialised as the purposes of this piece of equipment are, it has one major factor in common with most control and test equipment—the need for clear visual signalling. The orderly layout of control panels and well-proportioned lettering show the usefulness, in such a project, of the services of industrial designers in collaboration with technicians.

The tester is required to simulate working conditions for many different types of battery ranging in size from those used in walkie-talkie sets to very large models for special purposes. Some are intended for continuous running, others for intensive but intermittent use during transmission or for lower discharges over longer periods during receptions. The installation is unique in that it can cope with 50 batteries at once and can work with 28 different timing combinations. Readily replaceable discharge resistors are housed in the covered bays at each end, together with operator relays which are controlled by the timing clocks. Connection is made through a

Control desk is placed centrally between two sets of shelves, with numbered plug-points to accommodate 50 batteries for testing



flush-fitting telephone jackboard to which the timing combinations are connected. Ten telephone-type plugs (one to each shelf) are placed into the appropriate sockets to select the timing sequences required. The sockets are grouped in ten rows of 28 each, the rows corresponding to ten shelves, and the individual sockets within each row to the 28 timing sequences. (All the batteries on the same shelf must be connected to the same sequence.)

Timing the tests

Also in the circuit are three timing-sequence clocks, fitted above the jackboard. Cam-operated contacts within these clocks are interlocking, and each has four combinations—for example, one has cams for continuous tests of various durations; another, for intermittent tests such as two minutes' running in 30 or 60 minutes. Their dials are divided into coloured segments, and a pointer indicates the start of any cycle. Pilot lights on the panels at the end of the shelves act as a guide to progress being made.

The shelves are numbered from 1 to 10, and the plug points on each shelf from 1 to 5. Indicators, in the sloping panel beneath the plugs, show the number of operation cycles to which each battery has been subjected—particularly useful information owing to the variation in testing periods.

Power house, radio or radar station, telephone switchboard, and many types of control and test equipment present similar problems in appearance design to this battery-testing installation

Dialling system

Voltage of any battery at any stage of its test can be read on a voltmeter (not shown in the illustration) fitted into the left-hand side of the desk-top. To bring this voltmeter into action, the number of the shelf concerned is dialled on a normal telephone type of dial, and the position-number of the individual battery on the shelf is then selected by depressing a switch the equivalent number of times. Small bulbs on either side of the jackboard light up while the operator is making the connection, so that if he is interrupted he can tell how many times he has depressed the switch.

The battery shelves are covered in rubber and the desk-top is of veneered Jicwood. The shape of the desk was specially designed to accommodate the voltmeter on the operator's left and provide an arm-rest on the right for his use while recording discharge curves. The three drawers below this shelf swing outwards to the right. The complete tester is made from standard-size steel sheets, stove-enamelled in silver-grey.

The central control panel is sloped slightly forward to enable the various indicators mounted on it to be more easily read. For similar reasons, the end door panels are placed at an angle (to face inwards); and as a result the designers reduced the width, for which a maximum of 16 ft. was specified, to 14 ft.

Lasting six months, this exhibition will give Cardiff shoppers an opportunity to see AND BUY *well-designed goods*
Left: *Harmony of wallpaper and fabrics is a feature of the smaller furnishing schemes.* Right: *The central hall*

ENTERPRISE in a Cardiff store

By Grace Lovat Fraser

DURING THE Design Week held in Cardiff last year, I met the Directors of David Morgan Ltd, a large Cardiff retail store, at one of the conferences. They were keenly interested in the whole idea of Design Week; became members of the new branch of the Design & Industries Association formed in Cardiff during the Week, and were anxious to follow-up the idea of Design Week so as to carry on and develop the good work already begun. Mr Trevil Morgan and his fellow directors felt that a retail store could—and should—do much to show the public what was happening in the world of design, and it was decided to stage a furnishing exhibition of some size in the body of the store. I was engaged to design the setting and the various display units, and to select, in co-operation with the various buyers concerned, the items to be shown.

From the first it was unanimously agreed that the exhibition, to be really useful, must be a *selling* exhibition; we would show only goods which were available at the moment to the public, and moreover could be backed-up by a reasonable amount of stock. We all felt that the public was weary of frustration and that it was time to show good design that could be bought as well as admired.

So began one of the most stimulating pieces of work I have ever undertaken. A good half of an entire floor was set aside as the exhibition site, and work began. All constructional and decorative work was carried out by the store's own maintenance staff. While this work was proceeding I was busy, first going through the store's existing stock and next, in company with the buyers, visiting various manufacturers to choose furniture, carpets, furnishing fabrics, household linens and wallpaper.

One of the most enjoyable aspects of this work was the enthusiasm and cooperation shown by the buyers concerned—and indeed by staff from other departments also. I was continually asked to tell them what we were doing, to explain the reasons behind our choice, and in fact to conduct miniature Cook's tours through the growing show.

The exhibition, now open, is called *Background for Living*. It is divided into a corridor of five furnished model rooms; a central hall which holds eight smaller furnishing schemes as well as over a hundred furnishing fabrics, and a smaller hall in which are twelve small furnishing schemes, a model kitchen-dining room and another large kitchen, as well as a bathroom and special displays of household linens. In the model rooms and smaller schemes are shown papered or painted walls, furniture, carpets and curtains.

We have endeavoured to display as wide a range of styles as possible, from good traditional to contemporary designs, in order to give all schools of taste something to see—and perhaps to make some converts to the contemporary idiom.

Strength without weight

Light alloys used in new embossing presses

SINCE THE WAR many familiar products previously made in cast iron have been redesigned as light-alloy die-castings. The advantage usually claimed is considerable reduction of weight without sacrifice of strength.

The HarDall *No. 2* embossing press is an example of this trend. Its body is a gravity die-casting in aluminium alloy; it is stove enamelled in cream and black with a crackle finish. The designers—L. N. Richardson and T. E. Smalley, directors of HarDall Ltd, Luton—experimented with a cast handle, but found that, using this technique, a clumsy shape was necessary to give sufficient strength; so the present handle of 18-gauge steel shaped to an inverted U section, with reinforcing plate, was adopted instead.

The die itself, of aluminium alloy, is machine-engraved with the address required. The counterpart, of black plastic, is moulded against it, so that the lettering on the two corresponds exactly. The counterpart has, moreover, a metal insert to ensure that it retains its original size and shape. Die and counterpart are together so light that it is not uneconomic to send them by air mail to overseas dealers: they can then be easily attached by screws to the body of the press. This has enabled a considerable export trade to be built up, especially with the East.

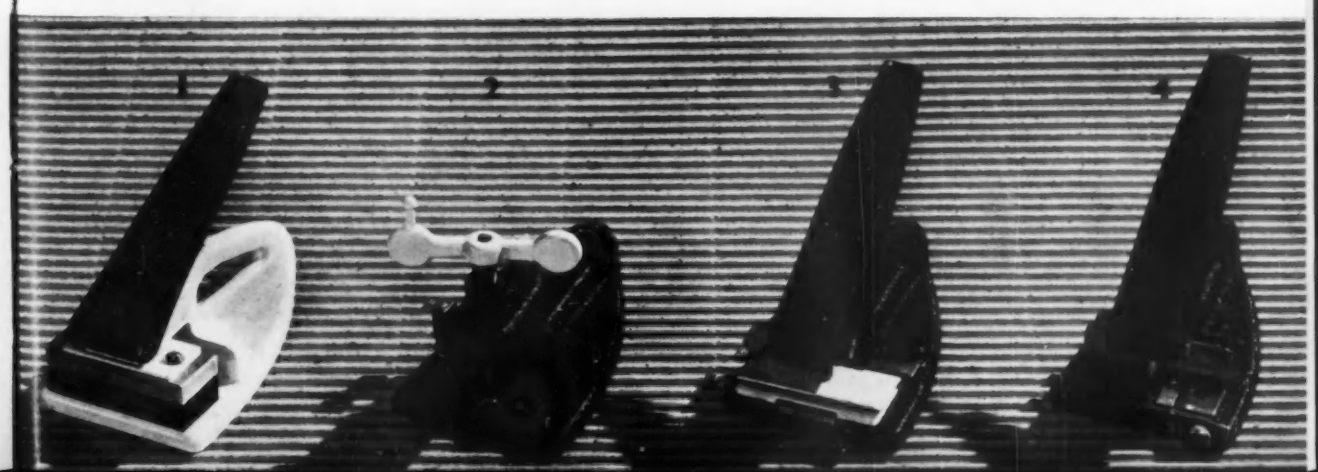
A development which will interest all who believe in standardisation is the use of the same basic body-casting in a range of other appliances which HarDall have introduced since the original embossing press.

NO MUSEUM PIECE, *but a type of embossing press which it is by no means unusual to find in current production. The example illustrated was bought from a London stationer's within the last three years*

NO FLOWERS BY REQUEST; *the same principle of operation is employed here, in HarDall's company-seal model, but it is very much lighter than conventional models, without sacrifice of necessary strength, because it is made in cast aluminium. The finish is crackle enamel*

STILL LIGHTER, *simpler, and less expensive: HarDall's No. 2 embossing press, for private notepaper. Its body is a light alloy casting, its handle of steel strip*

Growing family: *Since the introduction of the HarDall notepaper-embossing press,* **1**, *three further appliances have been introduced, all based on what is fundamentally the same body-casting;* **2**, *single-hole paper drill;* **3**, *paper punch;* **4**, *leather punch*



Packaging materials and methods

This month's DESIGN AND PRODUCTION section is devoted almost entirely to notes on some of the *Flexible Packaging Materials* shown in the exhibition of that name held in the Council of Industrial Design's Exhibition Hall at Murray House, London SW 1, 3-31 May. The exhibition may be shown in Glasgow later, under the auspices of the Council's Scottish Committee

AN EXPERIMENTAL PVC bag with welded seams has recently been produced to contain lubricating oil, as an alternative to the usual tin or bottle. This heat-sealing plastic material is tough and virtually impermeable to many liquids, including water and oil; developments may therefore be expected in the use of PVC bags for a variety of purposes.

Associated with the use of PVC film is a transfer process which makes practicable the application of *multi-coloured* designs and lettering to plastic films. The design is reverse-printed by a silk-screen process on to ordinary transfer paper, using inks with a PVC base. It is then transferred to the plastic film by running film and transfer paper together through heated rollers. Since all the colours are applied together, difficulties of register do not arise at this stage, and the design becomes to some extent incorporated in the film, so that it is not readily removed.

Preventing corrosion

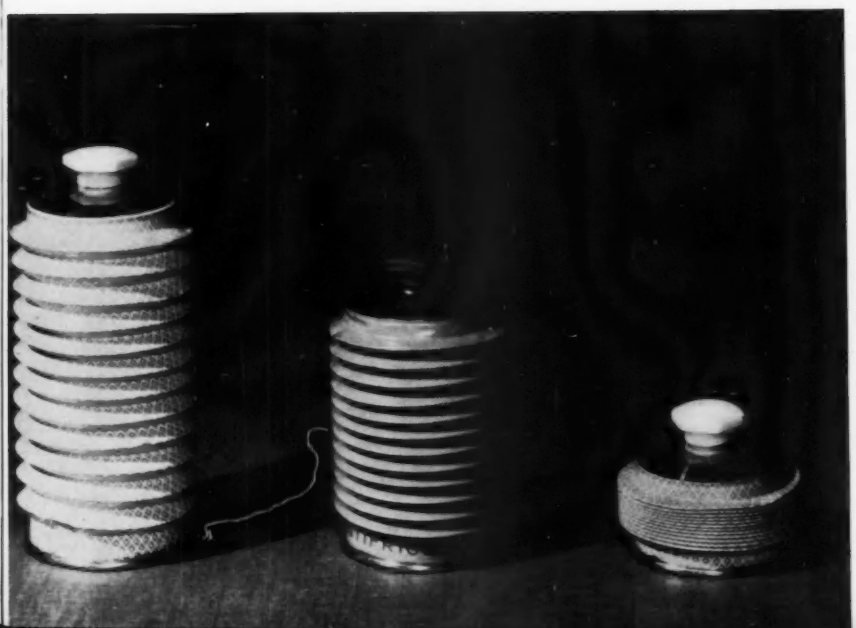
A CHEMICAL CALLED VPI which prevents the corrosion of metals, particularly iron and steel, is now available for the first time in this country. This chemical, which has been developed by the Shell Petroleum Company and was briefly mentioned in April DESIGN (p. 14), promises to make possible new methods of corrosion-preventive packaging and will interest manufacturers who are concerned with inhibiting the corrosion of metal objects either between manufacturing stages, during storage, or in transit. Similar techniques are already in use in USA.

VPI is a white crystalline powder which slowly gives off an odourless, non-toxic vapour. This vapour completely surrounds any article in an enclosed space, forming an invisible protective film on the surface of metal objects. The film prevents corrosion in the most humid atmospheres and remains effective even when moisture condenses on a steel surface. The chemical does not remove moisture or react with it, but protection is afforded as long as VPI is present in the atmosphere.

To minimise the loss of VPI vapour, it is advisable to wrap the article in a relatively impermeable material such as waxed paper, but it is *not* necessary for the wrapper to be hermetically sealed, and even if the paper becomes torn or punctured protection is not lost.

For many purposes the most convenient method is to use wrapping paper coated with VPI. The untreated side can be printed if required, so that the use of VPI-treated paper instead of plain wrapping paper does not necessarily entail a change in surface design. The need for normal anti-corrosion treatment is eliminated and the articles when unwrapped are clean and ready for use. Shell VPI-260 is now available in powder form together with experimental quantities of treated paper.

Development of this pleated collapsible tube, invented in 1939 by Mr. Charles Davis, was delayed by the war. Latest version is patterned; earlier prototypes were plain



"Squeezable" bottles

POLYTHENE, A PLASTIC material with many unusual properties, is likely to find many more applications in packaging in the near future. This pearly-white flexible material, which resembles wax to the touch, was originally developed in this country, but war-time restrictions on the use of packaging materials here enabled America to obtain the lead. Now, however, polythene is available in this country as film, sheet, coated paper and in many other forms. The latest type of polythene product to become available is a range of flexible, "squeezable" bottles. These lend themselves to containing powders or liquids which can be puffed or sprayed by squeezing the bottle.

Polythene is remarkably inert to almost all chemicals, including concentrated acids and most organic solvents. It has a very high resistance to the passage of water-vapour

and its extreme flexibility makes it virtually unbreakable.

Pleated collapsible tubes

A BRITISH INVENTION which has been taken up in France transforms the familiar collapsible tube into a pleated tube of unusual and by no means unattractive appearance. A special machine effects the pleating, using conventional collapsible tubes made of lead, tin-coated lead or tin. (Aluminium is not considered suitable.) The contents are expelled by collapsing the tube from end to end, so that the tube will always stand on its base and look neat. The inventor claims that this product is in effect a "tube-jar" which should be particularly suitable for cosmetic creams. It was illustrated in the Press just before the war, but production was held up and the "tube-jar" has not been seen again in this country, until the present exhibition.

Sacks—jute and paper

A FRENCH PROCESS which is now being adopted in this country is likely to be of interest to the many users of ordinary jute sacks. A rotary loom has been developed to weave seamless hessian tubing of the same width as normal sacks. The sacks are made by cutting this tubing into lengths and sewing-up one end.

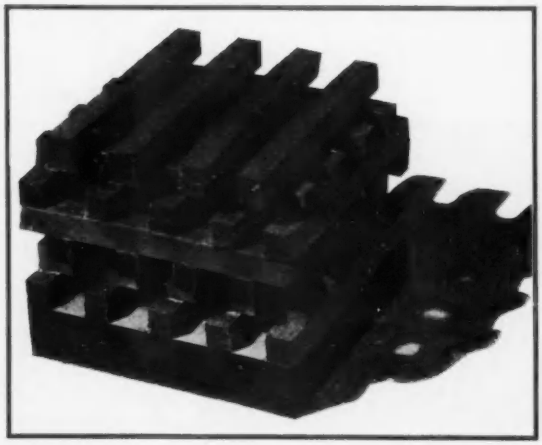
The result is a sack claimed to have a bursting strength higher than that of conventional sacks with a side seam. Elimination of the process of sewing a side seam is likely to make the tubular sacks cheaper to produce.

For certain purposes the use of paper as a packaging material has been hampered by the fact that normal papers, when they become wet, lose most of their strength and tear easily. During the last few years papers have been developed which have a higher "wet-strength"—*i.e.*, strength when wet—as a result of the incorporation of a small percentage of synthetic resins during manufacture. Such papers retain up to 50 per cent of their original strength when saturated with water, and their dry strength is also increased, thanks to the better interlocking of the paper fibres. One of the first applications of these wet-strength papers has been in the manufacture of paper sacks for cement which are liable to be exposed to rain and to be dragged over rough ground through pools of water.

C.F.B.

Restrictions on bread wrapping are to end on 1 November. This recent announcement by the Ministry of Food gives topical interest to the picture on right. It reproduces a page of Svenska Förpackningar *(house organ of the packaging firm AB Akerlund & Rausing) which illustrated mechanically wrapped loaves from three Swedish bakeries. They all use printed designs: and the resumption of bread wrapping in Britain—though shortage of materials will limit it to a part of the total output—may provide new opportunities for surface design*

Lattice blocks of Rubazote *soft expanded rubber, as seen below (and shown in the Exhibition), are extensively used as anti-vibration pads in transit cases for delicate instruments. (Expanded Rubber Co Ltd, Croydon)*



Bottles and jars of polythene—a plastic material inert to almost all chemicals and virtually unbreakable—can be compressed by squeezing. (Rediweld Ltd, Wandsworth, S W 18: described on facing page)

Letters

Design competitions

SIR: I am forwarding the following. You may consider it of interest to the readers of DESIGN.

Referring to the report on the Scottish Furniture Competition appearing in the March issue of DESIGN, I was greatly impressed by the seemingly efficient way in which this competition was conducted, especially in the method of judging, where the judges justified their choice of the successful and pointed out the shortcomings of the unsuccessful designs.

As an unsuccessful entrant in the solid fuel appliance section of the recent RSA Industrial Art Competition, I would like to say that the complete lack of comment by the judges of this competition on the merits and defects of the various designs (especially where reasons for some decisions were not obvious) renders the many hours spent in preparing the preliminary and final designs almost a complete waste of time to all but the winning entrants.

This difference in the judging of these two competitions may have been one of the reasons for the number of entrants being so few in some sections of the Industrial Art Competition, a fact which, according to the same issue of DESIGN, caused disappointment to the Royal Society.

DOUGLAS A. WEBB

Chertsey, Surrey

• The Secretary of the Royal Society of Arts (Mr K. W. Luckhurst) comments on this letter as follows:

"Mr Webb has unfortunately missed the whole purpose of the Industrial Art Bursaries Competition, which is primarily to encourage young British students of art and technical schools to enter those sections of industry in which design is of importance, and to assist the successful candidates to broaden their knowledge and experience by the study abroad of foreign design. The juries, in judging the entries, are therefore looking primarily for potential talent among the candidates. Consequently, the designs submitted are not judged entirely by their 'face value' but rather by the indications to be found in them of creative ability, sense of colour, good taste, imagination, and so forth: they are the means to the end rather than the end itself. The Scottish Furniture Competition to which Mr Webb refers was of an entirely different character, being a straight contest between designs submitted by various manufacturers in the furniture industry. The work was that of professional designers, not of students, and the two competitions are not comparable.

"It is certainly not true to say that there is a complete lack of comment on the work submitted. The report published by the Society does contain a good deal of general comment both by the Bursaries Board and by the respective Juries.

"Mr Webb is also a little unfair to the Society when he says that the time spent in preparing preliminary and final designs was 'almost a complete waste of time to all but the winning entrants.' At the conclusion of the preliminary stage of the Competition, all competitors in the Domestic Solid-Fuel-Burning Appliances Section were taken round a London showroom, where they were shown examples of modern domestic heating appliances, and had full opportunities to question and discuss the relative merits and demerits of their design and production with experts. At the end of the Competition, the Jury recommended that Mr Webb and another candidate, both of whom failed to qualify for a Bursary, should have the opportunity of gaining some of the technical experience which they seemed to lack. Consequently the Coal Utilisation Joint Council has generously made the necessary arrangements for these two candidates to visit foundries, offering to defray all expenses and, in addition, to provide £5 to each candidate for incidental expenses. These are far more useful methods of assisting the student than a series of generalisations—however valuable—from a Board of Assessors.

"Mr Webb offers as an explanation for the small response in some sections of the Competition a feeling among potential candidates that only the winners will benefit. We wish to assure him that due consideration will be given to this point of view. If, however, this were the principal reason for the lack of entries, it does not explain the fact that the entry in other sections is satisfactorily high. A more probable reason, in the opinion of our Bursaries Board, is that art and technical schools at present do not provide sufficient encouragement to students to employ their talents in some kinds of industrial design: *e.g.*, domestic solid-fuel appliances, leather goods and footwear. The possibility of this reason being the true one is supported by the fact that in those forms of industrial design to which art schools do give considerable attention—*e.g.*, textile design—the number of entries is very much larger.

Lightweight scarves

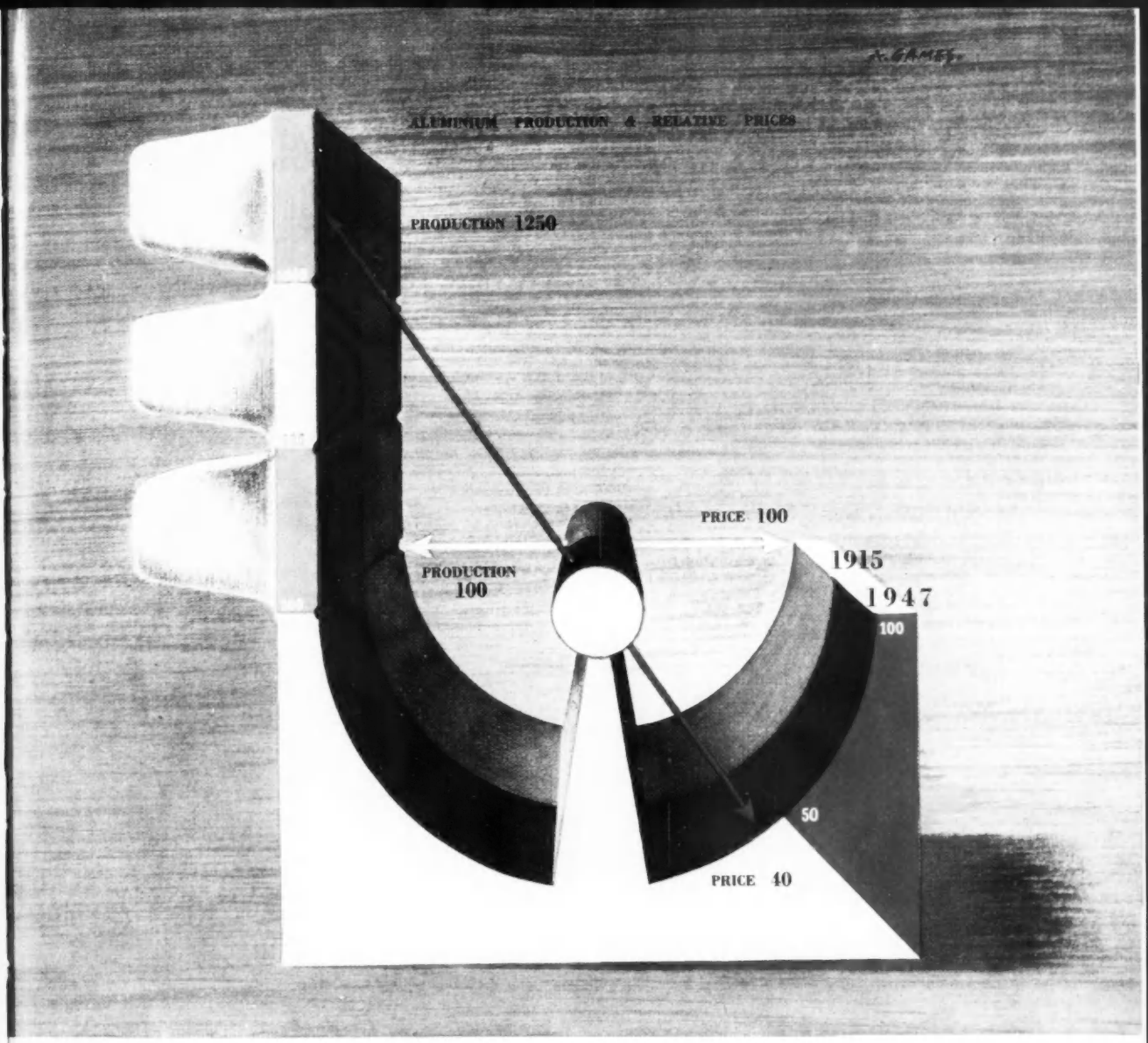
SIR: I was much interested in the reference in January DESIGN (p. 18) to the handwoven scarves of Miss M'Credie of Killearn. I, too, am making scarves of handspun wool and pure silk. The natural brown wool is Loaghtan, which comes from a breed of sheep indigenous to the Isle of Man.

In some of my designs, cotton selvedges have been used to give decorative edges and several cotton threads are introduced into the warp, as they form a contrast to the more even tension of the wool. . . .

SYLVIA LAUDER

Jurby East, Isle of Man

While DESIGN'S main concern is with the products of industry, we are glad to have news of developments in craft workalso. Mrs Lauder's scarves, two of which are shown on left, are of wool in natural colours (from white to dark brown). In some patterns, a silk warp has been employed



ALUMINIUM ECONOMICS . . *Production*

Aluminium production has multiplied 12½ times since 1915 while selling prices have been reduced by 60%. This achievement has been made possible by a far-sighted policy of development and expansion ahead of demand and by giving the consumer the benefit of economies effected through improved technique. Many of today's production problems can be solved by the ready availability of

BRITISH ALUMINIUM

THE BRITISH ALUMINIUM CO LTD SALISBURY HOUSE LONDON WALL LONDON EC2

Post-Utility

SINCE FREEDOM of design returned to the furniture trade, a number of new suites have been produced which, though of individual design, conform to Board of Trade specifications that enable them to be sold without purchase tax. Shown here is new bedroom furniture by Heal's, designed by Christopher Heal, MSIA. Together with the pieces illustrated, a wardrobe and dwarf wardrobe, not shown, make up a four-piece bedroom suite, available in light mahogany or light oak. The firm's recent national press advertisements, incidentally, have given prominence to the designer's name.

We learn that Heal's Contracts Ltd, subsidiary company of Heal & Son Ltd, supplied four executive-type desks, in sycamore and mahogany with red leather tops, designed by Mr J. Dennis Lennon for the new Rayon Design Centre. Other furniture for this Centre was illustrated in March, p. 10.

PLASTIC SHELL FOR LEATHER CASES

THE "VIKING" CASE, shown here, is a new type of leather hand-luggage, forming one piece of a suite that also includes wardrobe cases for men and women, overnight cases, blouse-cases and train cases. The covering is cowhide—rotproof, spongeable and available in various fast colours. Technically the new case is of interest because it is made on a moulded plastic shell of Fibrenyle (DESIGN, January, p. 21). The makers point out that "the use of this material permits economical production and an agreeable and practicable shape in which all the edges and corners of the case are rounded."

Designed by John W. Waterer, FSIA, for the manufacturers, S. Clarke & Co Ltd, London

★ DESIGN NEWS ★

IN PICTURES

Designed for ease of ironing

SHORTS FOR THE British women's squash team which recently visited USA were specially designed by Louis London & Sons, and they caused considerable interest in that country.

Two problems had to be solved, the first being quick laundering, drying and ironing. For that reason the firm designed a wrap-round garment all in one piece, which can be laid out flat for ironing, thus obviating the difficulty of ironing thick layers of fabric which retain moisture. The shorts comprise two distinct parts in the form of an underskirt which buttons at the back and an overskirt which buttons at the waist front.

The second problem was to produce a pair of shorts suitable to a woman's figure, which is often bulky over the hips. In this instance the pleats are carefully arranged to give a slim silhouette.

A matching blouse-brief combination has been designed, so that when in action the garment appears all in one piece, with no riding-up of the blouse above the shorts.

The garments—now in production—are made of white linen which launders perfectly, and the knicker part of the blouse is white locknit. Retail price of the complete outfit is £6 6*s* 4*d*.

PROTECTION — AND GOOD LOOKS

A CARDBOARD TRAY, wrapped in Cellophane, forms the new pack for Aristoc stockings. Cellophane was chosen because it can be heat-sealed, and for its protective qualities, rather than its more obvious virtue of transparency. Indeed, the only transparent portion is the scroll-shaped panel on which the brand-name appears; through this the colour of the stockings can be seen.

Size of the new packs is dictated by the fact that three of them must fit into a quarter-dozen hosiery box—the dimensions of which are so standardised that stock fixtures in many shops are based on them.

Designed by J. E. Slater of Leicester and printed by E. S. & A. Robinson Ltd of Bristol

Notebook

NOEL CARRINGTON, author of the article on "Decoration" on pages 2 to 7, is one of the stalwarts of the industrial-design movement. An early member of the Design and Industries Association—active on its Council from 1928 to 1947—he was the first editor of *Design for Today*, that pioneer journal which the Association published in the early 1930's.

Mr Carrington has written a number of books, including *Design in Civilisation*, of which a new edition recently came from Bodley Head, and the colourful King Penguin on *English Popular Art*. Author, editor and publisher, he has been a member of the Council of Industrial Design since 1947.

Master of the Faculty

NEW MASTER OF the Faculty of Royal Designers for Industry is Mr Alfred B. Read, ARCA, Director of Design of Troughton & Young Ltd, lighting specialists. Mr Read, who was made an RDI in 1940, has designed many lighting fittings both for special requirements and for quantity production, including the novel wall-bracket and standard fittings which attracted attention when first shown in the *Design at Work* Exhibition last year.

As Master of the Faculty, Mr Read succeeds Mr Gordon Russell, whose two-year term of office expires at the end of June.

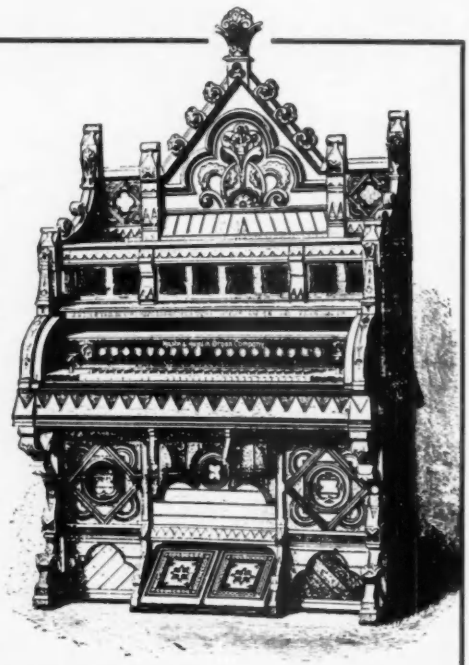
Britain in Amsterdam

THE COVER ILLUSTRATION of this issue shows part of the British exhibit at the International Exhibition of Industrial Design staged in Amsterdam to mark the twenty-fifth anniversary of the founding of the Dutch *Bond Voor Kunst in Industrie*.

The British section was arranged by the Council of Industrial Design for the British Council. The stands were originally designed by Milner Gray, RDI, FSIA, for the *Design at Work* exhibition, but were redressed for the Amsterdam exhibition to show a selection of current British products ranging from textiles through pottery to books, packaging, plastics, sports and household equipment. The display was arranged by Alec Heath, MSIA.

The exhibition, *Goed Maar Mooi* ("Useful but Attractive"), included sections from France, Belgium, Czechoslovakia and Switzerland, as well as a number of rooms showing Dutch products. It was opened on 8 April to run for six weeks. An illustrated report from Holland will appear in the June issue of DESIGN.

"Free from all the abortions *in the shape of ornament with which many pretentious instruments are disfigured. . . ." This was a contemporary writer's description (in 1877) of the organ shown here: reproduced from an absorbing new book,* Made in America, *by John A. Kouwenhoven (Doubleday, New York, $5). The book's theme is that "the arts in America reveal . . . the nature and the meaning of modern civilisation"*



Dutch inventiveness

ONE OF SEVERAL interesting exhibits at the recent Utrecht Industries Fair was an electrically-heated mattress, in which the elements were arranged to provide most heat at the foot and least at the head. Also on show were : a fully automatic machine of stainless steel, for manufacturers of aerated waters and fruit juices, to fill and seal 4,000 bottles a day; and an embroidery transfer that can be ironed eight or ten times instead of the usual once.

Tailpiece: *Baronial Castle*

IN A LETTER published in the *Railway Gazette*, 8 April, the Rev Wilfrid T. F. Castle of Cyprus suggests to the Railway Executive "that a different style of architecture be adopted for new work in each region (*e.g.*, Scottish Baronial for Scotland, Flemish for Eastern Region . . .).

"All I ask for is a reminiscence, not an imitation," he adds. "What one dreads is the London Transport style appearing in pleasant East Anglian market towns or in the Highlands!"

ANNOUNCEMENTS

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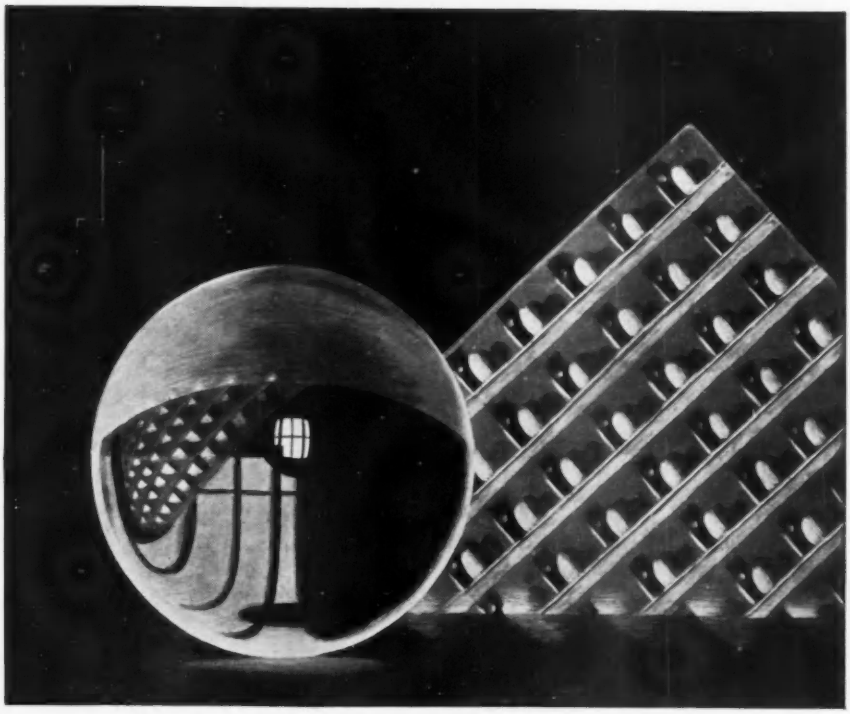

CLEAR AS CRYSTAL

GLASS is a necessity of modern civilization—a material which affects our daily lives far more than is commonly recognized. We see through glass windows, spectacles, binoculars and microscopes. We eat and drink from glass. We grow food under glass. We preserve and sell it in glass. We cook it in glass. We protect with glass. We decorate with glass. We light our houses with glass. We are beginning to build with glass. The manufacture of glass is thousands of years old. It probably began in ancient Egypt, where glass beads and amulets have been found in tombs of about 4000 B.C. But the great development in the uses of glass is of recent date. It is only since 1910 that glass-making may be said to have changed from a craft to a highly scientific and specialized industry. For this transition much credit must go to the glass manufacturing firms of Great Britain. The work of the Department of Glass Technology at Sheffield University is known all over the world. In the laboratory, vigorous and systematic research has resulted in progressive improvements in manufacturing efficiency; and in the design and appearance of the finished article. In the chemical factory, the maintenance of the highest standards of purity in the chemicals used in glass-making ensure the quality and reputation of British glass. Chief among these chemicals are sodium carbonate—soda ash—and sodium sulphate—"salt cake"—and certain special refining agents. Glassmaking profits by the research as well as the products of the chemical industry, but without adequate supplies of better optical glass and of various glasswares with specially resistant properties, scientific research would speedily suffer. The bond is mutual. If the chemist helps the British glass manufacturer to produce better glass, he depends on glass for the service he is able to give.

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